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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/735,355	12/12/2003	Zhongze Wang	MI22-2457	1800

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EXAMINER

KENNEDY, JENNIFER M

ART UNIT	PAPER NUMBER
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2812

DATE MAILED: 04/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/735,355

Applicant(s)

WANG, ZHONGZE

Examiner

Jennifer M. Kennedy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 March 2005.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-48 and 62-66 is/are pending in the application.
4a) Of the above claim(s) 42, 43, 45-47 and 63-65 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 40-41, 44, 48, 62, 66 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 12/12/03, 12/29/03, 6/22/04, 7/15/04, 10/26/04
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

Applicant's election with traverse of claims 40,41,44,48, 62, and 66 in the reply filed on March 23, 2005 is acknowledged. The traversal is on the ground(s) that Applicant does not believe that search and examination of all claims would be burdensome. This is not found persuasive. The examiner notes that the non-elected claims are directed to species that are mutually exclusive from the elected species and would require a burdensome search and examination.

The requirement is still deemed proper and is therefore made FINAL.

Claims 42-43, 45-47, and 63-65 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on March 23, 2005.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 40, 41, 44, 48, 62 and 66 are rejected under 35 U.S.C. 103(a) as being unpatentable over Inoue et al. (U.S. Patent No. 5,773,355) in view of Xiang (U.S. Patent No. 6,410,938).

In re claim 40, Inoue et al. a wafer bonding method of forming silicon-on-insulator comprising integrated circuitry, comprising:

forming a silicon dioxide (102) on at least a portion of an outer surface of a handle wafer (103);

nitridizing (105) at least a portion of an outer surface of the silicon dioxide effective to form silicon nitride on silicon dioxide; and

after the nitridizing, joining the handle wafer with an outer surface of a device wafer (see Figure 8-11, and column 8, lines 5-18).

Inoue et al. do not disclose the method of forming subsequent devices on the SOI substrate including forming a pair of source/drain regions separated by a channel region within the silicon, the silicon nitride being received intermediate the source/drain regions and the silicon dioxide; and forming a field effective transistor gate operably proximate the channel region.

Xiang discloses the method of forming subsequent devices on an SOI substrate including forming a pair of source/drain regions (40, 42) separated by a channel region (38) within the silicon, the silicon nitride (64) being received intermediate the source/drain regions and the silicon dioxide (60); and forming a field effective transistor gate operably proximate the channel region (28).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to form subsequent devices on the SOI substrate including forming a pair of source/drain regions separated by a channel region within the silicon, the silicon nitride being received intermediate the source/drain regions and the silicon dioxide; and forming a field effective transistor gate operably proximate the channel region because as Inoue et al. suggests SOI substrates are useful in MOS technology because they are superior to conventional single-crystal substrates in cost and performance (see column 1, lines 15-25), and as Xiang discloses SOI substrate prevent dopant depletion (see column 1, lines 40-65).

In re claim 41, Inoue et al. disclose the method wherein the outer surface of the device wafer (104) to which the handle wafer is joined comprises crystalline silicon.

In re claims 44, 48, 62, and 66, Xiang discloses the method wherein the nitridizing comprises ion implanting, wherein the nitridation is void of either direct or remote nitride containing plasma exposure, wherein the nitridizing comprises N₂ (see column 4, lines 34-65) and wherein the silicon nitride is from about 5 Angstroms to about 50 Angstroms thick (see column 3, lines 30-40). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the nitride layer by the method of Xiang, because as Xiang teaches the method allows for formation of a nitride layer that prevents the tendency of dopant material to migrate from the active regions, (see column 3, lines 30-45).

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer M. Kennedy whose telephone number is (571) 272-1672. The examiner can normally be reached on Mon.-Fri. 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael S. Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jennifer M. Kennedy
Patent Examiner
Art Unit 2812

jmk